

NASA Langley Research Center is actively seeking partnerships and collaborations to commercialize its Magnetic Field Response Measurement Acquisition Technology.

## The Market Opportunities

- Ability to make measurements in extreme environments
- Remote measurement acquisition system eliminates need for physical connection to power source or data acquisition equipment
- Multiple measurement capability using same RF antenna with a portable interrogation unit
- Sensors can be designed to simultaneously measure two unrelated physical quantities (e.g. fluid-level and position) or to measure multiple unrelated physical quantities
- Health and usage monitoring system for automotive or aerospace vehicles

## The Benefits

- Because semiconductors are not used, can make measurements up to the melting point of metals
- Because wires are eliminated, contribution to thermal load in cryogenic systems is eliminated
- Simplicity of system provides high reliability
- Able to work in high temperature, radioactive or corrosive environments
- Many sensor designs can be embedded in non-conductive material. For conductive material, inductive element can be placed away from conductive material surface
- Eliminates the need to have a data acquisition channel dedicated to each sensor
- Facilitates many measurements that were previously not possible
- Easy to add multiple new measurements

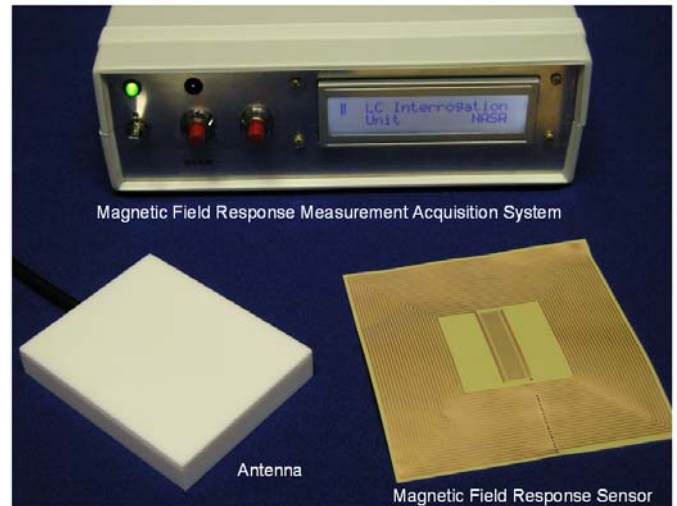
## The Technology

This invention provides a measurement acquisition method that eliminates the need for sensors to have physical connection to a power source (i.e. no lead wires) or to data acquisition equipment. The sensors are not required to be in proximity to any form of acquisition hardware. Multiple sensors can be interrogated using this method.

The key to this invention is the use of sensors designed as passive inductor-capacitor circuits that produce magnetic field responses. The response attributes

## Magnetic Field Response Measurement Acquisition System

L-C resonant circuit interrogation method for monitoring physical properties



*Magnetic Field Response Sensor*

correspond to states of physical properties which the sensors measure. A radio frequency antenna produces a time-varying magnetic field that remotely powers all sensors. The harmonic magnetic field responses of the inductors serve as a means of radio frequency transmission. The antenna receives the magnetic field response from each sensor - thus the system is completely wireless.

Unlike a traditional sensor that measures only a single physical property, the technology can be used to simultaneously acquire measurements of at least two unrelated physical properties (e.g., displacement rate and fluid level) by using different attributes of the sensor response.

## Additional Information

*To discuss in detail how this technology can profit you and your business, please contact:*

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